Claims

We claim:

1. A method of transmit power control during a group call to a plurality of devices comprising the steps of:

receiving a signal on a forward channel;

estimating a signal quality for the signal received on the forward channel; and

if the signal quality is below a threshold, transmitting a power control message on at least a portion of a single reverse channel, wherein the power control message requests an increase in transmit power for subsequently received signals.

2. The method of claim 1 and further comprising the step of continually transmitting the power control message until a signal quality of a subsequently received signal on the forward channel exceeds a second threshold.

3. The method of claim 1 wherein the signal quality is based on at least one of the following measurements: a bit error rate, a message error rate, a frame error rate, a received signal strength indicator, a symbol error rate, a waveform eye opening, a frequency lock and a time lock.

4. The method of claim 1 wherein the power control message is transmitted along with control symbols.

5. The method of claim 1 wherein the power control message is transmitted along with synchronization symbols and control symbols.

6. The method of claim 1 wherein the power control message further provides synchronization.

7. The method of claim 1 further comprising the step of, if the signal quality is above the threshold, not transmitting a power control message on at least a portion of the single reverse channel.

8. A method of transmit power control during a group call to a plurality of devices comprising the steps of:

transmitting at least one signal on a forward channel at a transmit power level; and

adjusting the transmit power level based on observing a single reverse channel, wherein the single reverse channel is shared by a plurality of receiving devices.

9. The method of claim 8 wherein the transmit power level is adjusted by a step size.

10. The method of claim 8 wherein the step of adjusting comprises increasing the transmit power level when a presence of a predetermined number of power control messages is observed on the single reverse channel within a window of time.

11. The method of claim 8 wherein the step of adjusting comprises decreasing the transmit power level when a non-presence of a predetermined number of power control messages is observed on the reverse channel within a window of time.

12. The method of claim 8 and further comprising the steps of:

detecting a transmit power oscillation;

setting an oscillation counter to a predetermined value based on the transmit power oscillation, wherein the predetermined value is a non-zero integer;

decrementing the oscillation counter value when a non-presence of a predetermined number of power control messages is observed on the reverse channel within a window of time; and

decreasing the transmit power level by a predetermined step size.

13. The method of claim 12 wherein the predetermined step size is a minimum value.

14. A method of transmit power control during a group call to a plurality of devices comprising the steps of:

transmitting signals on a forward channel at a transmit power level;

switching between three power states based on one of: a presence of X power control messages on a reverse channel within a first window of time, or a non-presence of Y power control messages on the reverse channel within a second window of time; and

dynamically adjusting the transmit power level for subsequent signals based on a current power state,

wherein a first power state is to maintain a current transmit power level, a second power state is to decrease the current transmit power level, and the third power state is to increase the current transmit power level, and wherein X and Y are integer values.

15. A method of transmit power control during a group call to a plurality of devices comprising the steps of:

setting a transmit power level to a predetermined power level;

transmitting at least one signal on a forward channel at the predetermined power level; and

if a first predetermined number of power control messages are detected on a reverse channel within a first time frame, increasing the transmit power level for subsequent signals; if a second predetermined number of power control messages are not detected on the reverse channel within a second time frame, decreasing the transmit power level for subsequent signals; otherwise, maintaining the transmit power level.

16. The method of claim 15 wherein the predetermined power level is a maximum power level.

17. The method of claim 15 wherein the predetermined power level is a minimum power level.